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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,653

02/28/2006

Shuichi Ichikawa

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04/29/2008

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

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EXAMINER

GUGLIOTTA, NICOLE T

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/567,653	Applicant(s) ICHIKAWA ET AL.	
	Examiner NICOLE T. GUGLIOTTA	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/9/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 - 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi (JP 2000-218165, provided by applicant), in view of Farrauto et al. (WO 93/10886, provided by applicant).

3. In regard to claim 1, Takeshi discloses a honeycomb filter, comprising a silica film 8 for increasing strength is formed in the inner face of a pore part of a base material 2 consisting of a porous silicon carbide sintered body and oxygen concentration of the base material containing the silica film 8 is 1 – 10 weight %. Oxygen in the porous silicon carbide sintered body containing the silica film 8 exists on the surface layer of the silicon carbide particles. It is possible thereby to improve breaking strength of the honeycomb filter (Abstract & Sections [0006], [0007], [0008], and [0011]). Takeshi is silent in regard to using a catalytic material composed of ceria and alumina.

4. Farrauto et al. disclose an invention which teaches a ceria-alumina catalytic material comprising essentially only ceria and alumina of sufficiently high surface area,

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dispersed on a suitable carrier, provides a durable and effective diesel oxidation catalyst (Page 10, Lines 29 – 34).

5. It would have been obvious to one skilled in the art at the time the invention was made that applying a ceria-alumina catalytic material to a honeycomb carrier would improve its durability and oxidation capabilities, as disclosed by Farrauto et al.

6. In regard to claims 2 and 3, Farrauto et al. discusses (Page 2, Lines 26 - 33) U.S. Patent No. 4,849,399 (Joy et al.), which discloses catalytic composites which incorporate sulfur-resistant refractory inorganic oxides selected from the group consisting of zirconia and alumina treated with titania and/or zirconia (see column 6, lines 62 - 68).

7. It would have been obvious to one skilled in the art at the time the invention was made that the addition of zirconia to the catalytic composite film would improve sulfur resistance, as disclosed by Farrauto et al.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi and Ichikawa et al. as applied to claim 1 above, and further in view of Ichikawa et al. (US 2003/0021948 A1).

9. Takeshi and Farrauto et al. are silent in regard to the use of metallic silicon as a binder for their honeycomb inventions.

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10. Ichikawa et al. disclose metallic silicon as a binder for bonding between silicon carbide particles (Section [0033]). In particular, metallic silicon used in the honeycomb structure and production process thereof, of the present invention is an excellent binder in view of thermal resistance, corrosion resistance, handleability, etc. (Section [0037]).

11. It would have been obvious to one skilled in the art at the time the invention was made that metallic silicon works well as a binder for silicon carbide particles due to its thermal resistance, corrosion resistance, and handleability, according to Ichikawa et al.

12. Claims 5, 8 -10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (US 2003/0021949 A1), in view of Farrauto et al.

13. In regard to claims 5 and 9, Tomita et al. disclose a process for producing silicon carbide-based porous body, molding the mixture to a predetermined shape, calcinating the molded material in an oxygen-containing atmosphere to remove the organic binder in the molded material, and firing the calcinated material to obtain a silicon-carbide based porous body wherein an oxygen-containing phase is formed at the surfaces of the silicon carbide particles and/or the metallic silicon or in the vicinity of the surfaces thereof (Section [0018]). Tomita et al. are silent in regard to a catalyst composition containing alumina and ceria.

14. Farrauto et al. disclose the present invention teaches that a ceria-alumina catalytic material comprising essentially only ceria and alumina of sufficiently high

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surface area, dispersed on a suitable carrier, provides a durable and effective diesel oxidation catalyst (Page 10, Lines 29 – 34).

15. It would have been obvious to one skilled in the art at the time the invention was made to add a ceria-alumina coating to the honeycomb body disclosed by Tomita et al., in that ceria-alumina has been shown to be an efficient catalytic material which provides durability and an effective diesel oxidation catalyst, as disclosed by Farrauto et al.

16. In regard to claims 8 and 10, Tomita et al. disclose the heat treatment is carried out preferably in a temperature range of 500 to 1,400°C (Section [0020]).

17. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al., in view of Farrauto et al. as applied to claim 5 above, and further in view of Dawes (U.S. Patent No. 5,998,328).

18. In regard to claim 6, Tomita et al. disclose the presence of oxygen. However, Tomita et al. and Farrauto et al. are silent in regard to creating an oxidizing atmosphere using steam.

19. Dawes et al. disclose activating a honeycomb structure, made of silicon carbide (Col. 4, Lines 3 - 12), which is done by known methods such as exposing the structure to an oxidizing agent such as steam at high temperatures. Activation creates a high surface area and in turn imparts high adsorptive capability to the structure (Col. 7, Lines 12 - 20).

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20. Takashi et al. and Tomita et al. above both disclose an oxygen containing atmosphere for oxidizing the surface of the honeycomb body. Dawes et al. disclose using steam as an oxidizing agent for the surface of a silicon carbide honeycomb body. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to oxidize the surface of the honeycomb structure using steam.

21. In regard to claim 7, applicant claims heat treatment is conducted by burner combustion and heating using natural gas fuel.

22. Dawes et al. disclose the placement of structure into an oven to evaporate the solvent (Col. 8, Lines 60 – 62).

23. Natural gas is a common and conventional fuel. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use burner combustion (natural gas) to heat the silicon carbide-based honeycomb structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE T. GUGLIOTTA whose telephone number is (571)270-1552. The examiner can normally be reached on M - Th 8:30 - 6 p.m., & every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NICOLE T. GUGLIOTTA
Examiner
Art Unit 1794

/Carol Chaney/

Supervisory Patent Examiner, Art Unit 1794